

Lesson Plan

***Name of the Faculty :** Mr. ASHOK KUMAR(Theory, Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : I.C. ENGINES

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03,Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical day	Topic
1 st	1 st	Introduction Working principle of two stroke and four stroke cycle,	1 st	Study of a two stroke engine using cut section model,
	2 nd	SI engines and CI engines,	2 nd	note the function and material of each part.
	3 rd	Otto cycle, diesel cycle and dual cycle		
2 nd	4 th	Location and functions of various parts of IC engines	3 rd	Study of a four stroke engine using cut section model
	5 th	materials used for them	4 th	Note the function of each part
	6 th	Concept of IC engine terms:		

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3 rd	7 th	bore, stroke, dead centre crank throw, compression ratio,	5 th	Study of battery ignition system of a multi-cylinder petrol engine stressing ignition timings
	8 th	piston displacement, piston speed	6 th	setting, fixing order and contact breaker; gap adjustment
	9 th	Test		
4 th	10 th	Concept of carburetion	7 th	Study of cooling of IC engine.
	11 th	Air fuel ratio	8 th	
	12 th	Simple carburetor and its application,		

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5 th	13 th	MPFI, Common rail system,	9 th	Study of lubricating system of IC engine.
	14 th	super charging turbo charger	10 th	
	15 th	Test		
6 th	16 th	Components of fuel system	11 th	Determination of BHP by dynamometer.
	17 th	Description and working of fuel feed pump	12 th	
	18 th	Fuel injection pump		

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7 th	19 th	Injectors	13 th	Morse test on multi-cylinder petrol engine.
	20 th	Test	14 th	
	21 th	Description of battery coil		
8 th	22 th	magnet ignition system	15 th	Local visit to roadways or private automobile workshops.
	23 th	Electronic ignition system	16 th	
	24 th	Fault finding in ignition system		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)		
9 th	25 th	remedial action		Revise
	26 th	Test		Revise
	27 th	Function of cooling system in IC engine		
10 th	28 th	Air cooling and water cooling system		Revise
	29 th	use of thermostat		Revise
	30 th	radiator and forced circulation in water cooling		

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	Lecture Day	Topic (including assignment / test)		
11 th	31 th	(description with line diagram)		Revise
	32 th	Function of lubrication Types and properties of lubricant		Revise
	33 th	Lubrication system of engine		
12 th	34 th	Fault finding in cooling and lubrication		Revise
	35 th	remedial action		Revise
	36 th	Test		

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Week	Theory			Practical
	Lecture Day	Topic (including assignment / test)		
13 th	37 th	Engine power indicated and brake power		Revision
	38 th	Efficiency – mechanical thermal. relative and volumetric		Revision
	39 th	Methods of finding indicated and brake power		
14 th	40 th	Morse test for petrol engine		Revision
	41 th	Heat balance sheet		Revision
	42 th	Concept of pollutants in SI and CI engines,		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)		
15 th	43 th	pollution control, norms for two or four wheelers		Revise
	44 th	BIS – I, II, III and IV methods of reducing pollution in IC engines,		Revise
	45 th	alternative fuels like CNG and LPG		

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***Name of the Faculty :** Mr. BALJIT SIWACH(Theory,Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : MACHINE DESIGN AND DRAWING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-02, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Design – Definition, Type of design, necessity of design Comparison of designed and undesigned work	1 st	Design Procedure G-1
	2 nd	Design procedure. Characteristics of a good designer.	2 nd	Design Procedure G-2
	3 rd	Design terminology: stress, strain, factor of safety, factors affecting factor of safety		
2 nd	4 th	Stress concentration, methods to reduce stress concentration.	3 rd	Methods to reduce stress concentration G-1
	5 th	Fatigue, endurance limit. General design consideration.	4 th	Methods to reduce stress concentration G-2
	6 th	Codes and Standards (BIS standards).Properties of engineering materials: elasticity, plasticity.		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
3 rd	7 th	Malleability, ductility, toughness, hardness and resilience. Fatigue, creep.	5 th	Revision G-1
	8 th	Tenacity, strength .Selection of materials, criterion of material selection	6 th	Revision G-2
	9 th	Assignment.		
4 th	10 th	Test-01	7 th	Principal stresses G-1
	11 th	Various design failures- maximum stress theory		Principal stresses G-2
	12 th	Maximum strain theory maximum strain energy theory.		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
5 th	13 th	Classification of loads.	8 th	Practice of design problems based on different failure theories G-1
	14 th	Simple Design problem based of these failure theories.	9 th	Practice of design problems based on different failure theories G-2
	15 th	Design under tensile, compressive and torsional loads		
6 th	16 th	Assignment- Test		Practice of design problem based on bending and torsion only G-1
	17 th	Type of shaft, shaft materials Type of loading on shaft, standard sizes of shaft available.	10 th	Practice of design problem based on bending and torsion only G-2
	18 th	Shaft subjected to torsion only.		

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Semester : 6th

Subject : MACHINE DESIGN AND DRAWING

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****Work Load (Lecture / Practical) per week (in hours):** Lecturers-02, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
7 th	19 th	determination of shaft diameter (hollow and solid shaft) on the basis of : - Strength criterion - Rigidity criterion	11 th	Practice of design problem subjected to torsion and bending both G-1
	20 th	Determination of shaft dia (hollow and solid shaft) subjected to bending	12 th	Practice of design problem subjected to torsion and bending both G-2
	21 th	Determination of shaft dia (hollow and solid shaft) subjected to torsion only.		
8 th	22 th	Determination of shaft dia (hollow and solid shaft) subjected combined torsion and bending.	13 th	Revision G-1
	23 th	Design of shaft basis on Rigidity criterion.	14 th	Revision G-2
	24 th	Simple design problem based on Shaft design.		

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****Work Load (Lecture / Practical) per week (in hours): Lecturers-02, Practical-06**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
9 th	25 th	Assignment --Test		Practice of design column for key under sharing and crushing G-1
	26 th	Types of key, materials of key functions of key	15 th	. Practice of design column for key under sharing and crushing G-2
	27 th	Failure of key (by Shearing and Crushing).Design of key (Determination of key dimension)		
10 th	28 th	Effect of keyway on shaft strength. (Figures and problems)	16 th	Revision G-1
	29 th	Simple design problem based on Key design		Revision G-2
	30 th	Assignment --Test		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
11 th	31 th	Introduction, Advantages and Disadvantages of screw joints, location of screw joints.	17 th	Designation of screw threads G-1
	32 th	Important terms used in screw threads	18 th	Designation of screw threads G-2
	33 th	Designation of screw threads Initial stresses due to screw up forces.		
12 th	34 th	Stresses due to combined forces. Design of power screws (Press, screw jack, screw clamp).	19 th	Design of power screws G-1
	35 th	Simple Design problem based on Screw joints. Assignment.		Design of power screws G-2
	36 th	Types of cams and followers theoretical.		

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	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
13 th	37 th	Profile of cams. for imparting following motion with knife edge and roller followers • Uniform motion	20 th	Cam profile and different terms G-1
	38 th	• Simple harmonic motion		Cam profile and different terms G-2
	39 th	• Uniformity accelerated and retarded motion.		
14 th	40 th	Practice for Cam profile	21 th	Generation of Cam profile G-1
	41 th	Practice for Cam profile		Generation of Cam profile G-2
	42 th	Assignment --Test		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
15 th	43 th	Nomenclature of gears Conventional representation.		Profile of Gear G-1
	44 th	Drawing the actual profile of involute teeth gear by different methods.] Practice for gear profile .	22th	Profile of Gear G-2
	45 th	Assignment --Test		

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***Name of the Faculty :** Mr. H.K.DHINGRA(Theory)

Discipline : MECHANICAL

Semester : 4th

Subject : WORKSHOP TECHNOLOGY-II

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
1 st	1 st	Cutting Tools - Various types of single point cutting tools their uses
	2 nd	Single point cutting tool geometry, tool signature and its effect
	3 rd	Heat produced during cutting and its effect, Cutting speed, feed and depth of cut and their effect
2 nd	4 th	Cutting Tool Materials - Properties of cutting tool material Study of various cutting tool materials viz. High-speed steel,
	5 th	tungsten carbide, cobalt steel cemented carbides, stellite, ceramics and diamond
	6 th	Test

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****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
3 rd	7 th	Principle of turning Function of various parts of a lathe
	8 th	Classification and specification of various types of lathe Work holding devices
	9 th	Lathe tools and operations :- Plain and step turning facing, parting off, taper turning, eccentric turning, drilling, reaming,
4 th	10 th	boring, threading and knurling, form turning, spinning. Cutting parameters
	11 th	Speed, feed and depth of cut for various materials for various operations, machining time
	12 th	Speed ratio, preferred numbers of speed selection

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Week	Theory	
	Lecture Day	Topic (including assignment / test)
5 th	13 th	Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate,
	14 th	angle plate, mandrel, steady rest, follower rest, taper turning attachment, tool post grinder
	15 th	milling attachment Quick change device for tools.
6 th	16 th	Introduction to capstan and turret lathe
	17 th	Test
	18 th	Test

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****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
7 th	19 th	Principle of drilling Classification of drilling machines and their description
	20 th	Various operation performed on drilling machine drilling, spot facing, reaming, boring, counter boring,
	21 th	counter sinking, hole milling, tapping Speeds and feeds during drilling
8 th	22 th	impact of these parameters on drilling machining time.
	23 th	Types of drills and their features nomenclature of a drill
	24 th	Drill holding devices

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Week	Theory	
	Lecture Day	Topic (including assignment / test)
9 th	25 th	Test
	26 th	Principle of boring Classification of boring machines
	27 th	their brief description Boring tools
10 th	28 th	boring bars and boring heads.
	29 th	Test
	30 th	Working principle of shaper planer and slotter

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Week	Theory	
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11 th	31 th	Type of shapers Type of planers
	32 th	Types of tools used their geometry
	33 th	Speeds and feeds in above processes.
12 th	34 th	Test
	35 th	Introduction , Types of broaching machines Single ram and duplex ram horizontal type
	36 th	vertical type pull up, pull down, push down

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Week	Theory	
	Lecture Day	Topic (including assignment / test)
13 th	37 th	Elements of broach tool, broach tooth details nomenclature, types, and tool material.
	38 th	Test
	39 th	Importance and use of jigs and fixture Principle of location
14 th	40 th	Locating devices Clamping devices
	41 th	Advantages of jigs and fixtures
	42 th	Test

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Week	Theory	
	Lecture Day	Topic (including assignment / test)
15 th	43 th	Function of cutting fluid Types of cutting fluids
	44 th	Difference between cutting fluid and lubricant Selection of cutting fluids for different materials and operations
	45 th	Common methods of lubrication of machine tools.

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Semester : 4th

Subject : HYDRAULICS AND HYDRAULIC MACHINES

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Fluid, types of fluid properties of fluid viz mass density, weight density	1 st	Measurement of pressure head by employing i) Piezometer tube
	2 nd	(specific weight), specific volume, capillarity, specific gravity, viscosity	2 nd	ii) Single and double column manometer
	3 rd	compressibility, surface tension, kinematic viscosity dynamic viscosity and their units.		
2 nd	4 th	Test	3 rd	To find out the value of coefficient of discharge for a venturimeter
	5 th	Concept of pressure (Atmospheric Pressure, gauge pressure, absolute pressure),	4 th	To find out the value of coefficient of discharge for a venturimeter
	6 th	Pascal's Law, Static Pressure		

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3 rd	7 th	peizometer tube manometers – simple U-tube, differential single column,	5 th	Measurement of flow by using venturimeter
	8 th	inverted U-tube, micromanometer including simple problems	6 th	Measurement of flow by using venturimeter
	9 th	Bourdon pressure gauge, Diaphragm pressure gauge, ead weight pressure gauge		
4 th	10 th	Test	7 th	Verification of Bernoulli's theorem.
	11 th	Types of fluid flow steady and unsteady, uniform and non-uniform	8 th	Verification of Bernoulli's theorem.
	12 th	laminar and turbulent; rate of flow and their units; continuity equation of flow		

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	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
5 th	13 th	potential energy of a flowing fluid; total head;	9 th	To find coefficient of friction for a pipe (Darcy's friction).
	14 th	Bernoulli's theorem (statement and proof) and its applications.	10 th	To find coefficient of friction for a pipe (Darcy's friction).
	15 th	Discharge measurement with the help of venturi-meter,		
6 th	16 th	orifice meter, pitot-tube, limitations of Bernoulli's theorem simple problems.	11 th	To study hydraulic circuit of an automobile brake and hydraulic ram.
	17 th	Test		To study hydraulic circuit of an automobile brake and hydraulic ram.
	18 th	Definition of pipe flow, wetted perimeter		

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	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
7 th	19 th	hydraulic mean depth, hydraulic gradient; loss of head due to friction	12 th	Study the working of a Pelton wheel and Francis turbine.
	20 th	Chezy's equation and Darcy's equation of head loss (without proof),	13 th	Study the working of a Pelton wheel and Francis turbine.
	21 th	Reynold's number and its effect on pipe friction siphon, Nozzle - definition		
8 th	22 th	velocity of liquid flowing through the nozzle, power developed. Water hammer, anchor block	14 th	To study a single stage centrifugal pump for constructional details
	23 th	syphon, surge tank (concept only). Loss of head in pipes due to sudden enlargement		Its operation to find out its normal head and discharge.
	24 th	sudden contraction, obstruction on flow path, change of direction and pipe fittings (without proof)		

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9 th	25 th	C _c , C _v , C _d , flow through drowned partially drowned orifices,	15 th	Revision
	26 th	time for emptying a tank through a circular orifice.	16 th	Revision
	27 th	Simple problems.		
10 th	28 th	Test	17 th	Revision
	29 th	Description, operation application of hydraulic systems	18 th	Revision
	30 th	hydraulic ram, hydraulic jack, hydraulic brake		

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11 th	31 th	hydraulic accumulator, hydraulic door closer,	19 th	Revision
	32 th	hydraulic press, selection of specification of above systems for different applications	20 th	Revision
	33 th	Test		
12 th	34 th	Concept of a turbine types of turbines –impulse and reaction type	21 th	Revision
	35 th	difference between them Construction and working of pelton wheel,	22 th	Revision
	36 th	Francis turbine, Propeller and Kaplan turbines		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
13 th	37 th	Unit speed, unit power, unit discharge, specific speed of turbines,		Revision
	38 th	selection of turbines based on specific speed. Concept of hydraulic pump		Revision
	39 th	single acting reciprocating pump (construction and operation only), vane, screw and gear pumps.		
14 th	40 th	Construction, working and operation of centrifugal pump		Revision
	41 th	Performance, efficiencies specifications of a centrifugal pump.		Revision
	42 th	Trouble shooting and problems in centrifugal pumps		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
15 th	43 th	remedial measures, pitting		Revision
	44 th	cavitation, priming.		Revision
	45 th	Test		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical day	Topic
1 st	1 st	Introduction units of measurement	1 st	Use of dial indicator for measuring taper.
	2 nd	standards for measurement and interchangeability	2 nd	
	3 rd	International, national and company standard		
2 nd	4 th	line and wavelength standards. Planning of inspection	3 rd	Use of combination set, bevel protector
	5 th	what to inspect? When to inspect?	4 th	and sine bar for measuring taper.
	6 th	Who should inspect? Where to inspect?		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical day	Topic
3 rd	7 th	Types of inspection: remedial, preventive and operative inspection	5 th	Measurement of thread characteristic using vernier
	8 th	incoming, in-process and final inspection Study of factors influencing the quality of manufacture	6 th	Measurement of thread characteristic using gauges
	9 th	Test		
4 th	10 th	Basic principles used in measurement and gauging,	7 th	Use of slip gauge in measurement of center distance between two pins.
	11 th	mechanical, optical, electrical and electronic	8 th	
	12 th	Study of various measuring instruments		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical day	Topic
5 th	13 th	calipers, micrometers dial indicators, surface plate,	9 th	Use of tool maker's microscope
	14 th	straight edge, try square, protectors sine bar, clinometer, comparators	10 th	Use of tool maker's comparator
	15 th	mechanical, electrical and pneumatic		
6 th	16 th	Slip gauges, tool room microscope, profile projector.	11 th	Plot frequency distribution for 50 turned components
	17 th	Limit gauges: plug, ring snap, taper, thread, height	12 th	
	18 th	depth, form, feeler, wire their applications for linear, angular, surface		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04,Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical day	Topic
7 th	19 th	thread and gear measurements, gauge tolerances.	13 th	With the help of given data, plot X charts R, P and C charts
	20 th	Geometrical parameters and errors Errors & their effect on quality,	14 th	
	21 th	concept of errors measurement of geometrical parameter such as straightness, flatness and parallelism.		
8 th	22 th	Study of procedure for alignment tests on lathes, drilling and milling machines.	15 th	
	23 th	Testing and maintenance of measuring instruments	16 th	
	24 th	Test		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)		
9 th	25 th	Basic statistical concepts empirical distribution and histograms		
	26 th	Frequency mean, mode, standard deviation		
	27 th	normal distribution		
10 th	28 th	binomial and Poisson Simple- examples		
	29 th	Introduction to control charts		
	30 th	namely X, R, P and C charts their applications.		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)		
11 th	31 th	Sampling plans, selection of sample size,		
	32 th	method of taking samples frequency of samples.		
	33 th	Inspection plan format and test reports		
12 th	34 th	Concept of total quality management (TQM)		
	35 th	National and International Codes. ISO-9000, concept and its evolution		
	36 th	QC tools Introduction to Kaizen, 5S		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-04, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)		
13 th	37 th	Measurement of mechanical quantities		
	38 th	such as displacement, vibration,		
	39 th	frequency, pressure temperature		
14 th	40 th	by electro mechanical transducers of resistance,		
	41 th	capacitance & inductance type.		
	42 th	Test		

Lesson Plan

***Name of the Faculty :** Mr. RAMESH RAWAT (Theory, Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : INSPECTION AND QUALITY CONTROL

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecture-04,Practical-04**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)		
15 th	43 th	Revision		
	44 th	Test		
	45 th	Test		

Lesson Plan

***Name of the Faculty :** Mr. SARTAJ SINGH(Theory,Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Material, History of Material Origin Scope of Material Science	1 st	Classification of about 25 specimens of materials/machine parts into
	2 nd	Overview of different engineering materials applications,	2 nd	(i) Metals and non metals (ii) Metals and alloys (iii) Ferrous and non ferrous metals (iv) Ferrous and non ferrous alloys
	3 rd	Classification of materials Thermal, Chemical, Electrical, Mechanical properties of various materials		
2 nd	4 th	Present and future needs of materials Overview of Biomaterials	3 rd	Given a set of specimen of metals and alloys (copper, brass, aluminium, cast iron, HSS, Gun metal);
	5 th	Semiconducting materials Various issues of Material Usage-Economical	4 th	identify and indicate the various properties possessed by them.
	6 th	Environment and Social.		

Lesson Plan

***Name of the Faculty :** Mr. SARTAJ SINGH(Theory,Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
3 rd	7 th	Test	5 th	Study of heat treatment furnace
	8 th	Fundamentals: Crystal, Unit Cell Space Lattice	6 th	
	9 th	Arrangement of atoms in Simple Cubic Crystals, BCC, FCC and HCP Crystals		
4 th	10 th	Number of atoms per unit Cell, Atomic Packing Factor.	7 th	Study of a metallurgical microscope
	11 th	Deformation: Overview of deformation behavior its mechanisms	8 th	Study of a specimen polishing machine.
	12 th	Behavior of material under load and stress-strain.		

Lesson Plan

***Name of the Faculty :** Mr. SARTAJ SINGH(Theory,Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
5 th	13 th	Failure Mechanisms: Overview of failure modes fracture, fatigue and creep	9 th	To prepare specimens of following materials for microscopic examination and to Examine the microstructure of the specimens of following materials:
	14 th	Test	10 th	i) Brass ii)Copper iii)Grey iv)Malleable v)Low carbon steel vi)High carbon steel vii) HSS
	15 th	Introduction: History development of iron and steel		
6 th	16 th	Different iron ores, Raw Materials in Production of Iron and Steel	11 th	To anneal a given specimen and find out difference in hardness as a result of annealing
	17 th	Basic Process of iron-making and steel-making, Classification of iron and steel,		
	18 th	Cast Iron: Different types of Cast Iron manufacture and their usage		

Lesson Plan

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Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
7 th	19 th	Steels: Steels and alloy steel, Classification of plain carbon steels	12 th	To normalize a given specimen
	20 th	Availability, Properties and usage of different types of Plain Carbon Steels	13 th	find out the difference in hardness as a result of normalizing.
	21 th	Effect of various alloys on properties of steel Uses of alloy steels		
8 th	22 th	Non Ferrous Materials: Properties uses of Light Metals and their alloys	14 th	To harden and temper a specimen
	23 th	properties and uses of White Metals and their alloys.	15 th	find out the difference in hardness due to tempering.
	24 th	Test		

Lesson Plan

***Name of the Faculty** : Mr. SARTAJ SINGH(Theory,Practical)
Discipline : MECHANICAL
Semester : 4th
Subject : MATERIALS AND METALLURGY
Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03, Practical-06**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
9 th	25 th	Purpose of heat treatment Solid solutions and its types	15 th	
	26 th	Iron Carbon diagram, Formation and decomposition of Austenite	16 th	
	27 th	Martensitic Transformation Simplified Transformation Cooling Curves		
10 th	28 th	various heat treatment processeshardening tempering, annealing, normalizing, Case hardening	17 th	
	29 th	Surface hardening, Types of heat treatment furnaces required for above operations	18 th	
	30 th	Test		

Lesson Plan

***Name of the Faculty :** Mr. SARTAJ SINGH(Theory,Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
11 th	31 th	Important sources of plastics Classification	19 th	
	32 th	thermoplastic and thermo set their uses	20 th	
	33 th	Various Trade names of engg Plastics, Plastic Coatings		
12 th	34 th	Test	21 th	
	35 th	Composites Classification, properties, applications	22 th	
	36 th	Ceramics Classification, properties, applications		

Lesson Plan

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Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
13 th	37 th	Heat insulating materials		
	38 th	Test		
	39 th	Properties and uses of Asbestos Glass wool, thermocole, cork, mica		
14 th	40 th	Overview of tool and die materials, Materials for bearing metals		
	41 th	Spring materials Materials for Nuclear Energy,		
	42 th	Refractory materials		

Lesson Plan

***Name of the Faculty :** Mr. SARTAJ SINGH(Theory,Practical)

Discipline : MECHANICAL

Semester : 4th

Subject : MATERIALS AND METALLURGY

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-06

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
15 th	43 th	Test		
	44 th	Test		
	45 th	Test		

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
1 st	1 st	Concept /Meaning its need
	2 nd	Qualities and functions of entrepreneur
	3 rd	barriers in entrepreneurship
2 nd	4 th	Sole proprietorship partnership forms of business organizations
	5 th	Schemes of assistance by entrepreneurial support agencies at National
	6 th	State, District –level

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
3 rd	7 th	organisation: NSIC, NRDC, DC, MSME, SIDBI
	8 th	NABARD, Commercial Banks
	9 th	SFC's TCO, KVIB
4 th	10 th	DIC, Technology Business Incubators (TBI)
	11 th	Science and Technology Entrepreneur Parks
	12 th	Test

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
5 th	13 th	Scanning of the business environment
	14 th	Salient features of National State industrial policies
	15 th	and resultant business opportunities
6 th	16 th	Types and conduct of market survey
	17 th	Assessment of demand and supply in potential areas of growth
	18 th	Identifying business opportunity

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
7 th	19 th	Considerations in product selection
	20 th	Test
	21 th	Preliminary project report
8 th	22 th	Detailed project report including technical
	23 th	economic and market feasibility
	24 th	Common errors in project report preparations

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
9 th	25 th	Exercises on preparation of project report
	26 th	Test
	27 th	Definitions and importance of management Functions of management:
10 th	28 th	Importance and process of planning organising, staffing, directing and controlling
	29 th	Principles of management (Henri Fayol, F.W. Taylor) Concept and structure of an organization
	30 th	Types of industrial organisations a) Line organization b) Line and staff organisation c) Functional Organisation

Lesson Plan

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Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03

Week	Theory	
	Lecture Day	Topic (including assignment / test)
11 th	31 th	a) Leadership <ul style="list-style-type: none"> • Definition and Need • Qualities and functions of a leader
	32 th	<ul style="list-style-type: none"> • Manager Vs leader • Types of leadership
	33 th	b) Motivation <ul style="list-style-type: none"> • Definitions and characteristics
12 th	34 th	<ul style="list-style-type: none"> • Factors affecting motivation • Theories of motivation (Maslow, Herzberg, Douglas, McGregor)
	35 th	a) Human Resource Management <ul style="list-style-type: none"> • Introduction and objective
	36 th	<ul style="list-style-type: none"> • Introduction to Man power planning, recruitment and selection • Introduction to performance appraisal methods

Lesson Plan

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Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
13 th	37 th	b) Material and Store management <ul style="list-style-type: none"> • Introduction functions, and objectives • ABC Analysis and EOQ
	38 th	c) Marketing and sales <ul style="list-style-type: none"> • Introduction, importance, and its functions • Physical distribution
	39 th	<ul style="list-style-type: none"> • Introduction to promotion mix • Sales promotion
14 th	40 th	d) Financial Management <ul style="list-style-type: none"> • Introductions, importance and its functions • Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT
	41 th	a) Customer Relation Management (CRM) <ul style="list-style-type: none"> • Definition and need • Types of CRM
	42 th	b) Total Quality Management (TQM) <ul style="list-style-type: none"> • Statistical process control

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
15 th	43 th	<ul style="list-style-type: none">• Total employees Involvement• Just in time (JIT)
	44 th	c) Intellectual Property Right (IPR) <ul style="list-style-type: none">• Introductions, definition and its importance• Infringement related to patents, copy right, trade mark
	45 th	Test

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
1 st	1 st	Introduction to productivity factors affecting productivity
	2 nd	Measurement of productivity causes of low productivity
	3 rd	methods to improve productivity
2 nd	4 th	Definition and scope of work study
	5 th	Inter-relation between method study and work measurement
	6 th	Human aspects of work study

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
3 rd	7 th	Role of work study in improving productivity Test
	8 th	Objectives and procedure for Method analysis
	9 th	Information collection recording techniques
4 th	10 th	Principles of Motion analysis Therbligs
	11 th	SIMO charts Normal work area
	12 th	design of work places

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
5 th	13 th	Ergonomics
	14 th	Test
	15 th	Objectives; work measurement techniques
6 th	16 th	stop watch time study principle
	17 th	equipment used and procedure
	18 th	systems of performance rating

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
7 th	19 th	calculation of basic times
	20 th	various allowances
	21 th	calculation of standard time
8 th	22 th	work sampling
	23 th	standard data and its usage
	24 th	Test

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
9 th	25 th	Introduction to wages
	26 th	Wage payment for direct and indirect labour
	27 th	Wage payment plans and incentives
10 th	28 th	various incentive plans
	29 th	incentives for indirect labour
	30 th	Test

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)
Discipline : MECHANICAL
Semester : 6th
Subject : INDUSTRIAL ENGINEERING
Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)
****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
11 th	31 th	Introduction, objectives
	32 th	components (functions) of P.P.C Advantages of production planning and Production Control
	33 th	stages of P.P.C, process planning, routing, scheduling
12 th	34 th	dispatching and follow up routing purpose, route sheets
	35 th	scheduling – purpose, machine loading chart Gantt chart, dispatching – Purpose
	36 th	procedure, follow up – purpose and procedure CPM/PERT technique

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
13 th	37 th	drawing of simple networks critical time calculation
	38 th	Production Control in job order, batch type and continuous type of productions
	39 th	Difference between these controls Test
14 th	40 th	Introduction, purpose/functions of estimating costing concept
	41 th	ladder and elements of cost
	42 th	difference between estimation and costing

Lesson Plan

***Name of the Faculty :** Mr. SHIVENDER DAHIYA(Theory)

Discipline : MECHANICAL

Semester : 6th

Subject : INDUSTRIAL ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-04**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
15 th	43 th	Overheads and their types estimation of material cost
	44 th	estimation of cost for machining processes numerical problems
	45 th	Test

Lesson Plan

***Name of the Faculty :** Mr. VIPIN KUMAR(Theory,Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : AUTOMOBILE ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Automobile its development	1 st	Fault and their remedies in (i) Battery Ignition system
	2 nd	Various types of automobiles manufactured in India	2 nd	(ii) magnetic Ignition system.
	3 rd	Layout of chassis		
2 nd	4 th	Test	3 rd	Demonstration of (i) Head Light Model
	5 th	Fuel systems for petrol and diesel engines including multi point fuel injection (MPFI)	4 th	(ii) Wiper and Indicators.
	6 th	common rail direct injection (CRDI)		

Lesson Plan

***Name of the Faculty :** Mr. VIPIN KUMAR(Theory,Practical)

Discipline : MECHANICAL

Semester : 6th

Subject : AUTOMOBILE ENGINEERING

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours):** Lecturers-03, Practical-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
3 rd	7 th	Fuel injectors and nozzles	5 th	Demonstration of (i) AC Pump
	8 th	Comparison of MPFI with carburetor system	6 th	(ii) SU Pump (iii) Master Cylinders.
	9 th	Concept of double overhead cam single overhead cam,		
4 th	10 th	Twin cam 16 valve technology in 4 cylinder engine. Test	7 th	Demonstration of (i) rear axle
	11 th	Clutch – Function Constructional details of single plate clutch	8 th	(ii) differential (iii) steering system
	12 th	Constructional details of multi plate clutch		

Lesson Plan

***Name of the Faculty :** Mr. VIPIN KUMAR(Theory,Practical))
Discipline : MECHANICAL
Semester : 6th
Subject : AUTOMOBILE ENGINEERING
Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

****Work Load (Lecture / Practical) per week (in hours): Lecturers-03, Practical-04**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
5 th	13 th	Centrifugal and semi centrifugal clutch Hydraulic clutch	9 th	Fault finding practices on an automobile
	14 th	Gear Box – Function Concept of sliding mesh,	10 th	four wheelers (petrol vehicles). four wheelers (diesel vehicles).
	15 th	constant mesh and synchromesh gear box Torque converter and overdrive		
6 th	16 th	Types of drives – Front wheel, Rear wheel, Four Wheel	11 th	Tuning of an automobile engine
	17 th	Function of Propeller shaft, Universal joint Differential and Different types of Rear axles and Front Axles		
	18 th	Wheels and Tyres - Types of wheels, Types specifications of tyres used in Indian vehicles, Wheel balancing		

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7 th	19 th	Function and principle of Ackerman steering mechanism Davis steering mechanism	12 th	Driving practice on a 4-wheeler
	20 th	types of steering gear boxes Worm and nut	13 th	Charging of an automobile battery
	21 th	worm and wheel worm and roller, rack and opinion		
8 th	22 th	Power steering system alignment of wheels	14 th	measuring cell voltage and specific gravity of electrolyte
	23 th	Toe in, toe out, camber caster, kingpin inclination.		
	24 th	Test		

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	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
9 th	25 th	Constructional detail of hydraulic brake	15 th	Changing of wheels and inflation of tyres
	26 th	working of mechanical hydraulic brake	16 th	balancing of wheels
	27 th	Concept of air and vacuum brake		
10 th	28 th	brake adjustment	17 th	Checking spark gap
	29 th	Introduction to Anti lock brake system its working.	18 th	valve clearance
	30 th	Test		

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	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
11 th	31 th	Suspension System Function, Types	19 th	Cleaning of a carburetor
	32 th	Working of coil spring leaf spring.	20 th	Adjusting of a carburetor
	33 th	Concept of Air suspension		
12 th	34 th	Concept of Shock absorber.	21 th	Revision
	35 th	Assignment	22 th	Revision
	36 th	Test		

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	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
13 th	37 th	Constructional details of lead acid cell battery		
	38 th	Maintenance of batteries		
	39 th	checking of batteries for voltage and specific gravity		
14 th	40 th	Magnato and Battery coil ignition system		
	41 th	Concept of Dynamo		
	42 th	Alternator - Construction and working		

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Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
15 th	43 th	Charging of battery by Alternator		
	44 th	Charging of battery by Regulator		
	45 th	Test		